

Analysis of Whole Effluent Toxicity Data Submitted November 2017

Documents Submitted	Explanation
Brine Toxicity Report 2/4/2016	WET Test on Outfall 004 Brine
Brine Toxicity Report 4/28/2017	WET Test on Outfall 004 Brine
Analytical Results 5/5/2017	Chemistry for the 4/28/2017 sample
Brine Toxicity Report 6/13/2017	WET Test on Outfall 004 Brine
Analytical Results 6/26/2017 (1)(2)(3)	Chemistry for the 6/13/2017 (3 different reports)
Synthetic Brine Toxicity Test Report	The lab created a mock sample (with the ionic composition of Outfall 004 brine) and ran a WET test.
Balanced Brine Toxicity Test Report	The lab 'corrected' the ionic imbalance in the Outfall 004 brine and ran a WET test. They used the 4/28/2017 sample, ran it in June.
Synthetic Brine Toxicity Test Report	The lab created a mock sample (with the ionic composition of Outfall 004 brine), then 'corrected' the ionic imbalance, and ran a WET test.

The sample collected on April 27, 2017 was a grab sample from the brine pond at LOOP. It was received by the lab on that same day. The sample had a salinity of 284ppth. The dilutions were prepared using:

Both Species			
Final Volume (mL) =			3,800
Conc.(%)	Effluent	DI	ASSW (31)
Dilution	0	0	3,800
3.22	122	1,118	2,560
4.29	163	1,493	2,144
5.72	217	1,988	1,595
7.63	290	2,648	862
10.17	386	3,414	0
Total/Day	1,178	10,661	10,961

The control water was all synthetic seawater at 31ppth. By using more DI on the higher dilutions, and less of the synthetic lab seawater, the lab maintained a salinity of about 31ppth across all dilutions. Dilution 10.17% for example used NO synthetic seawater, and diluted with DI. The experimental design at this point does not represent receiving water conditions, nor accurate dilution practices. The lab started a 7-day marine chronic WET test on April 28th with 3.22%, 4.29%, 5.72%, 7.63%, and 10.17%.

According to the COC, Gulf Coast Analytical received samples on 4/28 from every dilution in the dilution series (that were prepared with the above chart dilution) and ran chemistry on each dilution separately on 5/3/2017 and reported the results on 5/5/2017. They ran Ca, Mg, K, Na, Br, SO₂, and HCO₃ (alkalinity). They did not run chlorides which is the suspected ion that is causing the imbalance. (and to make it awkward, they ran chemistry on the June 13 sample, but did not run chemistry on the control).

At some point they balanced the effluent sample from 4/27/2017 and ran a WET test. I suspect they balanced the higher dilutions by adding salts to them (after having diluted with DI). You're supposed to run chemistry on the 100% effluent. From this they did the synthetic effluent and balanced that too.

284,000 mg/L in 100% sample You 3.8 L sample....You have 284mg/mL.....1,079,200 mg/3.8L
Dilution 7.63% has 290mL effluent: 82,360mg/290mL ...
82,360mg/862mL (that's 96mg/mL or 96,000mg/L ... or 96ppth)
dilution5.72% has 217mL: 61,628mg/1595mL (that's 39ppth)